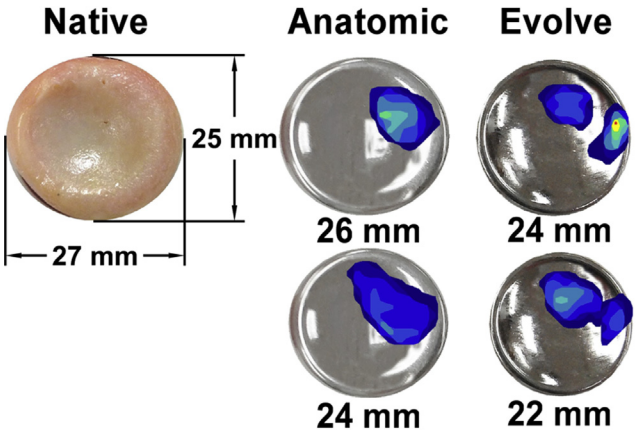

Figure 1 A set of pressure maps for a representative specimen showing distribution for varying design and size (lighter colors = higher pressures).

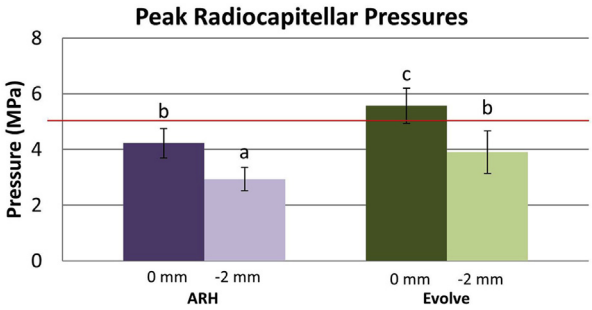

Figure 2 Radiocapitellar contact pressures (mean ± standard error). 0 mm represents manufacturer suggested sizing, -2 mm indicates under-sizing. Lowercase letters (i.e. a, b, c) indicate the results of post-hoc testing using least squares mean comparisons. Columns with letters in common are not statistically different from one another ($P \leq 0.05$). The 5 MPa threshold is indicated with a horizontal red line.

suggestion and give reason to consider doing the same for the Anatomic® prosthesis.

Paper #10 PREVENTION OF POST-TRAUMATIC ELBOW STIFFNESS USING BOTULINUM TOXIN

Henrik C. Bäcker, MD, *Christina Freibott, BA, Eric F. Swart, MD, Charles M. Jobin, MD, Robert J. Strauch, MD, Melvin P. Rosenwasser, MD, Columbia University Medical Center, Department of Orthopedic Surgery, New York, NY, USA*

Background: Approximately 30% of all upper extremity fractures are elbow fractures. This may lead to elbow stiffness and heterotopic ossification resulting in limited range of motion which is a challenging problem. A sufficient functional arc of motion is stated for flexion-extension 130°-30°-0° and for pronation/ supination 50°-0°-50°.

Aim: To investigate the efficacy of Botulinum Toxin (Botox) injections to prevent postoperative elbow stiffness after trauma, we performed a study in three steps.

Methods: All patients were included who presented to a single surgeon with distal humerus fracture, Monteggia fracture, or olecranon fracture. The study was developed in three steps: 1) prospective comparative pilot study to demonstrate the safeness of use and dosage of Botox between 1999 and 2003, 2) double-blinded prospective, randomized study between 2003 and 2007 to evaluate the functional outcome scores and range of motion and finally, 3) a retrospective study between 2007 and 2017 to assess clinical impact and the functional outcome after elbow fracture. For the prospective group, the Disabilities of the Arm, Shoulder, and Hand (DASH) score, Visual Analogue Scale for pain as well as the range of motion (ROM) were assessed after three months, six months and one year. For the retrospective study, range of motion measurements were recorded and analyzed using a paired t-test.

Results: In total, 79 patients were included, 32 patients (44%) received Botox injections and 47 patients (54%) were in the control group. The pilot study reported that Botox is a safe and effective method to prevent posttraumatic elbow stiffness, lasting six months, with an optimal dosage of 100 units each for the brachialis muscle and biceps brachii. In the prospective randomized study, a significant difference **($p<0.05$)** in VAS score and high positive trend in DASH score after 1 year **($p=0.06$)** between the botulinum **(VAS 1.2±5.2; DASH 11.18±11.0)** and control group **(VAS 5.7±21.9; DASH 54.46±7.59)** could be identified. For ROM, a positive trend especially for extension could be identified in Monteggia and significant difference in Intercondylar fracture **($p<0.05$)** 6-weeks postoperatively.

Conclusions: Botulinum toxin is a safe and promising treatment to prevent post-traumatic elbow stiffness. Our study demonstrates improved early range-of-motion, and better functional outcome like VAS and DASH score.

Paper #11 COUNTERFORCE BRACING OF LATERAL EPICONDYLITIS: A PROSPECTIVE, RANDOMISED, DOUBLE BLINDED, PLACEBO CONTROLLED CLINICAL TRIAL

Martin Kroslak, MBBS, MS, *Kajan Pirapakaran, MBBS, , Prof-George AC. Murrell, MD, PhD, Orthopaedic Research Institute, University of New South Wales, St George Hospital Campus, Australia*

Background: Counterforce bracing is one of the common treatment modalities for tennis elbow. The objective of this study was to determine whether counterforce bracing offers any additional benefit over placebo bracing in the treatment of tennis elbow.

Methods: This prospective, randomised, double-blinded placebo controlled clinical trial investigated the use of counterforce bracing (n=17) compared with placebo bracing (n=14) in the management of acute tennis elbow. Outcome measures included patient rated pain and functional outcomes, epicondyle tenderness and strength at 6 months and long term. Follow up occurred at 2, 6, 12 and 26 weeks, as well as long term (mean follow up 3 years). The study duration was 5 years.